INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

S-E-C-R-E-T

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SUBJECT	1955 Planned Production of the VEB Werk fuer Fernmeldewesen (WF)	DATE DISTR.	29 June 1955
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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

1. The VEB Werk fuer Fernmeldewesen WF (formerly HF - the title was changed as of 1 January 1955) has received notification from the State Planning Commission of the latter's decisions on the tasks proposed for 1955. 25X1

2. The lists set out in paragraphs 3 to 9 inclusive are complete for the television, VHF, and measuring-instrument departments, but do not include the Commission's ruling on the proposals of other departments, such as the telegraphy department, or the items in the Ministry of the Interior's Special Plan (Sonderplan).[1]

3. The following tasks were approved:

   a. K5-201 - Film scanner for normal frequencies. This instrument contains the Dl-optical component made by VEB Carl Zeiss Jena, with two half-Tessars and two photocells. The optical component must be adjusted with an accuracy of 5 µ. 50,000 DME have been authorized for putting this instrument into production. After completion, it will be sold to the Television Center, Berlin-Adlershof, at a price of 30,000 DME.

   b. K5-204 - Electronic organ. 120,000 DME have been authorized for an organ which is to operate by means of multivibrators. The development will be carried out in the electro-acoustic department under Dipl.-Ing. Hubl (fnu), using patents of Ing. Schreiber (fnu) in Domsch's (fnu) laboratory. Thus, this task appears by mistake in the television department's list.

   c. K5-212 - Customer's television servicing kit. A servicing kit has already been developed for the television service which, in certain respects, is superior to the corresponding Telefunken (West German) equipment. 5,000 DME have been made available for putting it into production.

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Note. Washington distribution indicated by "X"; Field distribution by #

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d. K5-222 - Modulation-measuring instrument. This task concerns an instrument for measuring parasite amplitude modulation in frequency modulation stages; its development has already been completed, and it is now to go into production.

e. K5-223 - Spectral analyzer. This analyzer for the frequency range 95-230 mcs has already been developed, and is now to go into production.

f. K5-225 - VHF spectrometer. The laboratory prototype of this instrument, for a frequency range of 40-100 mcs, has already been developed, and it is now to go into production.

g. K5-232 - Coaxial aerial feeder. A prototype aerial feeder for VHF and television, 250 m long, for a power output of 10 kW with minimum mismatching characteristics and attenuation; it will eventually be tested on the aerial tower in Marlow, Mecklenburg.

h. ST 5-233 - A paper on industrial television, collating all the possibilities and requirements in East Germany, and setting out details of their planning costs and possible completion dates.

i. K5-381 - Test route for pulse code modulation. This is a directional link route with a transmitter and receiver, operating on 2375 mcs, over which the pulse code procedure is to be tested. The transmitter is to have a power of 2 watts; the new impulse code tube is to be used for the impulse transmission.

j. K5-382 - Field strength measuring set. This consists of three instruments for the frequency ranges 300-700 mcs, 1400-1600 mcs and 2800-3200 mcs, which were originally developed for the USSR. Shortly after being handed over, the prototypes were sent back by the USSR as not suitable for series production and had to be scrapped. They had been built with parts which were either not standard or which could only be obtained from the West, so that difficulties were encountered when the Russians tried to copy them. Accordingly, in 1953 and 1954, the USSR ordered field strength measuring sets of a new design to be developed, which would be suitable for series production, but the order was cancelled at the beginning of 1954 for some unknown reason. This development will now be continued as an East German order; for the range 300-700 mcs and 1400-1600 mcs, the instruments are already available and the one for the range 2800-3200 mcs will be produced in the first quarter of 1955.

k. K5-383 wattmeter. This is an output meter for the video technique, giving a range of up to 20 mcs and cos φ and providing also for measurement of the pulse output.

l. K5-384 - Rotating field strength measuring circuit (Rotierende Messleitung). Rotating measuring circuits are to be developed for VHF and for decimeter frequencies (20-60 cm), similar to the Aurora instruments made by Telefunken.

m. K5-385 component parts for the 1.25-cm technique. As a continuation of the program begun in 1954 for the 1.25-cm wavelength, reactors, attenuators, absorbers, and a measuring circuit for wave-guide technique as applied to rectangular and TE_{10} waves are to be developed.

n. K5-386 - Pulse current meter. The development prototype for this instrument, completed last year, is to be handed over to the production department. A special single deflection cathode ray tube will indicate pulse current up to 200 amps.

o. K5-387 - Sensitivity signal generator assembly (Satz Empfindlichkeits-Messsender). An already completed klystron transmitter is to be improved. It covers three ranges - 7.5-15 cms., 15-30 cms., and 30-100 cms.

p. K5-388 - Wide-band test amplifier. This is a high-frequency preamplifier for 150 kcs-230 mcs; it is to achieve a 10-fold voltage amplification and serve as amplifier for broadcasting community aerials (Rundfunk-Gemeinschaftsantennen). It is to incorporate the new time-chain amplification (Laufzeit-Ketten Verstaerkung).

q. K5-389 - Two-beam oscillograph. This oscillograph is fitted with a chain amplifier which has a range of up to 50 mcs. Its development has already been completed and it is now to go into production.

r. F5-397 - Pulse phase meter for television. This is a measuring instrument for the control of phase rigidity of synchronous pulses. A competitive order has been given to VEB Funkwerk Koepenick for an instrument which will perform this task by another method.

s. K5-398 - Wave-guide measuring circuit for the 3-cm. wavelength. This task was completed in 1953 and is now to go into production.

t. K5-399 - Wave-guide change-over switch. This is required for comparing two receiver voltages, such as comparing the receiver field strength with a noise generator.

u. K5-401, 402, 403 - Wave meters for travelling-wave measurements. These instruments are to be developed for the ranges 5-8.5 cm, 8.5-15 cm, and 15-30 cm. The specifications demand the greatest possible accuracy.

v. K5-404 - 3-cm. "Echo-box". A good-quality resonator is required in radar techniques for the simultaneous control of transmitter output and receiver sensitivity. The vibration set up by the transmitter pulse appears on the picture tube as fading vibration, the attenuation and amplitude of which are calibrated upwards on the equipment (deren Daempfung und Amplitude emporisch auf die Anlage geeicht werden).

w. F5-407 - Noise generator for centimeter wavelengths. This instrument will use the principle of noise production by gas-discharge tubes inserted in a wave-guide circuit; difficulties are anticipated with the variation and calibration of the noise amplitude.

x. K5-412 - Attenuation through-feeds (Daempfungsdurchfuehrungen). The technique used hitherto of feeding attenuation through epsilon tubes is now to be applied to ferrite.

y. K5-414 - Narrow-band components for centimeter wavelengths. In radar techniques, throttle flanges (Drosselflansche) for fixed frequencies are required to enable wave-guide components to be joined together without loss.

z. K5-415 - Wave-guide measuring circuit for 7.5-cm. wavelength. This measuring circuit, the development of which has already been completed, is to go into production with specifications requiring the highest degree of accuracy, as necessitated in travelling-wave techniques.

aa. K5-416 - Components for 7.5-cm. wavelength. As in the case of K5-385, available components will now go into production with the requirements of additional accuracy, as necessitated by travelling-wave techniques.

bb. K5-417 - Generator for 7.5-cm. wavelength. A klystron generator is to be developed for travelling-wave techniques.

cc. K5-418 - Noise-measuring instrument for 15-cm. wavelengths. A noise generator with measuring facilities is required for travelling-wave techniques; either a noise diode or a gas-discharge tube will be used for the noise generator.

dd. K5-419 - Mixer for 3-cm. wavelengths. The mixers hitherto used to operate with two detectors in push-pull. A uni-directional mixer is to be produced.

ee. K5-420 - 10-cm. echo-box. See (v) above; this task is also for the control of radar instruments.

ff. K5-421 - Noise-measuring instrument, for 7.5-cm. wavelength. See (cc) above; this task is also of use in travelling-wave techniques.

gg. K5-423 - Components for 3-cm. wavelength. The available components are to go into production and a directional coupler (Richtkoppler) for this wavelength is to be developed.

hh. K5-425 and 426 - Field-strength meters, supplementary to (j) above, are to be developed and improved for the ranges 20-100 mcs and 100-320 mcs.

ii. K5-427 - Noise diode signal generator. The already developed instrument, with a range of 100 kcs-400 mcs, is to go into production.

jj. K5-428 - Rectangular-wave generator. The already developed instrument, which is used as a testing instrument for television and is mounted in a vehicle, is to go into production.

4. The following tasks were approved, subject to the prior submission and approval of a specification job-sheet (Pflichtenheft):

a. K5-202 - Television reporting equipment (Reportageanlage). 80,000 DME have been made available for this equipment to go into production.

b. K5-203 - Television camera. 60,000 DME have been made available for the development of a television camera of the most up-to-date type. It will be fitted with a high-sensitivity (Riesel) Iconoscope.

c. K5-206 - Small dia-positive scanner. 85,000 DME have been made available to develop this instrument, which is to be available either rack-mounted or in three cases.

d. K5-207 - Point-scanning testing instrument (Punktrasterpruefgeraet). This instrument is for determining the geometrical distortion of the optical components. 60,000 DME have been made available for its development.

e. K5-211 - Television traffic and control switching-fields. A control receiver is to be developed for the supervision of television relays between two main stations. It will be possible to switch it in by connecting it to the bar connectors on the distribution frame. 100,000 DME are to be made available for its development.

f. K5-390 - Luminescence meter. An instrument which was designed in 1949 is to be improved and produced in a more useful form.

g. K5-391 - Pulse test generator. This instrument is to produce pulse-modulated frequencies of 10.7, 21, 35 and 60 mcs for the control of the intermediate-frequency amplifiers of television and radar instruments.

h. K5-395 - Precision test circuit for 12-20 cm. wavelenths. A test circuit with an accuracy of 1% is required for travelling-wave techinques.

i. K5-396 - Precision level constancy meter. This instrument is for the control of the black and synchronization levels in the HF, video, and impulse elements of television instruments.

5. The following tasks were postponed:

a. F5-210 - Gradation compensator for television carrier systems. The distortions attributable to the poor quality of the decimeter links have made apparent the need for this instrument.[2]

b. K5-221 - 3 kW tone-control stage.[3] This was to be an improvement on that fitted in VHF transmitters, including the 10 kW television transmitter, the frequency-modulated tone component of which has worked with a 1 kW stage only.[4]

c. K5-224 - Spectral analyzer. This is a special frequency analyzer for the third television band (170-230 mcs) with a specially high wobble frequency variation of 10 mcs. This task was postponed and a reference made to 3(e) above.

d. K5-226 - Linearity measuring instrument for the time-base frequency.[5]

e. K5-229 - Decimeter television transmitter, to provide for the expansion of television broadcasting.[6]

f. K5-392 - Pulse generator for 0.1-1 μ second, using a hydrogen thyratron and a multivibrator circuit.[7]

g. K5-393 - Frequency rejection meter (Frequenzverwerfungsmesser).[8]

h. K5-410 - Bolometer output meter for 10-cm. wavelength.[9]

l. F5-424 - Pulse regeneration in television installations.[10]

6. The following tasks were deleted:

a. K5-208 - Commercial television receiver.[11]

b. F5-227 - Research on transmitters for the third television band.[12]

c. F5-228 - Decimeter television aerials.[13]

d. K5-409 - Rotating wave-guide test circuit for the 3-cm. wavelength.[14]

7. The following tasks can be proceeded with from the WF Plant's own resources.

a. K5-205 - Brightness meter.[15]

b. K5-231 - Color component meter for television picture tubes.

c. K5-394 - Flicker-testing instrument.[16]

8. Certain other tasks which have been the subject of discussion and argument, and which are not included in the above lists are nevertheless proceeding. These include:

   a. A small universal portable dia-positive scanner 24 x 36.

   b. A 35-mm. television film scanner, which was to have been completed during 1954 but could not be, because the plant had to direct all the available resources on to the 10 kW television transmitter program. The film-scanning was formerly carried out with a Mechau projector, but in the meantime, VEB Carl Zeiss Jena developed their D 1 Filmmaschine which can also be used for television film-scanning. This machine provides for a continuous run-through of the film, in the same way as the Mechau projector, but is much simpler. The interlaced scanning procedure (Zeilensprungverfahren) is carried out by two superimposed optical systems.

   c. A large synchronous pulse source for television studios (Studiotaktgeber), which also should have been completed in 1954.

   d. A low-loss coaxial feeder 250 m. long for aerials, the completion of which was delayed by shortage of materials, is to be completed by the end of March 1955.

   e. A 3 kW tetrode transmitter, excluded from the Plan, is nevertheless to be developed in the WF Plant out of Dr. Alfred Schiller's investment funds, because it is required for testing tetrodes.

   f. 150,000 DME have been allocated by the State Planning Commission for studies, experiments, and development of color television.[17]

   g. A television camera unit is being built for the operating theater in the Charité Hospital complex. Here, for the first time, a Zeiss Vocavor will be used, employing a lens system which, without loss of definition, permits a constant changing of the focal length in any given position. In this way, it will be possible to go from a general picture with wide angles to an enlargement of a small part of the picture without changing the position of the camera. The University Clinic at Halle has also ordered a machine of this sort.

9. The following 1954 tasks of (a) the tube department, under Dr. Ignatz Ladurner, and (b) the plant laboratory, under Dr. phil. Kurt Richter, have not been completed and will run on into 1955:

   a. (1) K4-102 - Klystron 723 A/B, for radar
      (2) K4-5/163 - Scanning pentode (Kipppentode) for television
      (3) K4-5/164 - Amplifying pentode PL 81, a power pentode for use in wide-band repeaters for television transmission.[19]
      (4) K4-386 - Double-grid thyratron for pulse production in radar and television.
      (5) K4-5/605 - Measuring multiplier (Messvervielfacher).[20]

   b. (1) K4-115 - High-temperature oven for 2,900° C.
      (2) V4-5/300 - Getter material containing titanium.[21]
      (3) V4-5/303 - Pure sinter paste.[22]

10. Some of the details of current work on tasks which have already been reported as forming part of the East German Ministry of the Interior's Special Plan (MdI Sonderplan) are as follows:

a. Magnetron LMS-1000. The coupling of the HF lead to the LMS-1000 is by means of a concentric lead in a built-in wave-guide of rectangular section and critical dimensions. The tube has an air-cooled external anode (Aussenanode) and is a nine-slit magnetron (Neunschlitzmagnetron). A pulse power of 500 kW has already been produced with a duty cycle (im Tastverhaeltnis) of 1:1000 on a wave-length of 10 cms. Although 5 preliminary prototypes have been completed and delivered to VEB Funkwerk Leipzig for use in 10-cm. radar developments, work is still going on to increase the power output, and a new version is expected to be ready by the end of 1955.

b. High-power keying tube SRS-453 has been completed and is to be used for modulating the LMS-1000.

c. A 20 kW pulse magnetron for the 3-cm. wavelength with a duty cycle (beim Tastverhaeltnis) of 1:1000 is being developed.

d. Attempts are being made to improve the 3 and 10 cm. blocking tubes.

e. The pencil tubes are being further developed, including one with a pot electrode (Scherbenelektrode) for 4 Gcs.; (sic) VEB Funkwerk Leipzig-Plagwitz is working on a device for large-area flight traffic control (Grossraumflugsicherung), in which they will be used.

f. Steps are to be taken to reduce the percentage of rejects in miniature-tube production.

11. In a discussion during the third week of January 1955, attended by Dr. Ignatz Ladurner, Director Rudi Mueller, Dr. Ing. Guenter Ulrich, Dipl.-Ing. E. Rehbock and representatives of the Ministry of the Interior, it was made clear that:

a. both in tube development and production, civilian requirements were now to be disregarded;
b. sub-miniature tubes, miniature tubes, and transmitters and receivers of minimum size, weight, and power requirements were to be developed.

1. [redacted] 25X1

2. [redacted] Comment: Further attempts are to be made to have this task authorized, and also others in this sphere which have been submitted, for example, a test-set for picture tubes with 1,000 lines, and an upper-harmonic filter. 25X1

3. Washington Comment: [redacted] 25X1
[redacted] It is not known whether this is actually a "3" or not. 25X1

4. [redacted] Comment: As this television transmitter has sold quite well, the government does not consider an improvement of this sort necessary. 25X1

5. [redacted] Comment: This was to provide an improvement in television reception, but the development was considered by the appropriate East German authorities as too luxurious. 25X1

6. [redacted] Comment: In certain large towns in the west, decimeter wavelengths are already in use, but to the DDR authorities such an innovation seems to be too far removed from essential requirements. 25X1

7. [redacted] Comment: All pulse generators built hitherto, as for example, Telefunken's Schnecke instrument, work on the principle of cut-off sinusoidal vibrations; however, these pulses have not steep enough sides, and, Dr. Ing. Guenter Ulrich hopes to be able to proceed with this task when he has obtained the expert opinion of the appropriate Working Party. 25X1

8. [redacted] Comment: The Ministry for Post and Telecommunications had already announced their requirement for 20 such instruments for controlling television transmitters. The State Planning Commission, on the other hand, is of the opinion that these instruments can be bought more cheaply in the West, but, with the recommendation of the Zentral-Institut fuer Forschung- und Technik (ZIFT), the WF Plant hopes that this task will be approved at a later date. 25X1

9. [redacted] Comment: A similar order has been given to the Wissenschaftlich-Technisches Buero fuer Geraetebau (WTBG) which will meet this requirement. 25X1

10. [redacted] Comment: Regeneration of synchronous pulses is essential when television transmissions are relayed over decimeter links. This task will be resubmitted. 25X1

11. [redacted] Comment: This task was proposed by Dipl.-Ing. Stier (fnu) who suggested that a servicing receiver should be developed which could be set up anywhere, with exceedingly little distortion, to control reception. This task was turned down with the observation that the ball receiver manufactured by VEB Sachsenwerk Radeberg would have to suffice. 25X1

12. [redacted] Comment: This research task was to investigate, in particular, new sorts of disturbance efforts which manifest themselves in connection with 10-kW transmitters, and to suggest steps for their removal. 25X1

13. [redacted] Comment: This task was planned as a research theme and was to be worked upon in conjunction with 5 (i). As paragraph 5 (i) has been postponed, this will be dropped. 25X1

14. [redacted] Comment: This task was deleted with the comment that task 3 (a) fulfills the same requirement. The essential advantages of rotating measuring circuits were not recognized by the officials of the Planning Commission because they have no technical background. 25X1

15. [redacted] Comment: This task had already been started by the Television Center, Berlin-Adlershof, but not finished. The need for such a test instrument has been expressed by those working on picture tube development. Its development would cost 35,000 DME. 25X1

16. [redacted] Comment: This instrument was intended for the supervision of television receivers on the test bench and in service. The State Planning Commission refused to allocate funds for it on the ground that it would be merely an aid to production. 25X1

17. [redacted] Comment: Dr. Peter Neidhardt is in charge of these funds, but his laboratory has no resources to permit modern experiments to be carried out. Since November 1954, Dr. Neidhardt has a Dipl.-Ing. as his subordinate, two technical assistants (female), and one secretary. No coordination takes place between Dr. Neidhardt's color television laboratory, because it is not desired by either side, although better experimental facilities are available in the latter. It is possible that sub-tasks will be diverted to Petkowschek, in order to avoid having to refund to the government any part of the allotted funds. 25X1 25X1

18. [redacted] Comment: [redacted] the "5/" in the numbers of some of these tasks [redacted] may indicate that such tasks are scheduled as carrying over into 1955; on the other hand, it is not quoted in the titles of all tasks in that category. 25X1 25X1

19. [redacted] Comment: (2) and (3) are copies of Telefunken and Philips tubes, whose performance and characteristics it is sought to reproduce. 25X1

20. [redacted] Comment: This is an electron multiplier with metal meshes instead of reflectors; its function is to amplify the scanning current in television pick-up instruments. (Development work on all these tubes has been completed and they are now ready to go into production.) 25X1

21. [redacted] Comment: This is for use in transmitter tubes which develop great heat; it is proposed to improve the vacuum with titanium because barium is not satisfactory. 25X1

22. [redacted] Comment: The application of the paste to cathodes continues to produce difficulties, which are closely related to the problems of paste production. 25X1

23. [redacted] Comment: From the State Planning Commission's comments on the list of tasks returned to the Werk WF, it appears that the serial number 024 227b has been allotted to this factory for the purposes of the DDR Planned Economy. 25X1

[redacted] 25X1